

### **REMARKS/ARGUMENTS**

Claims 1-4, 6-8, and 10-19 have been resubmitted. Claims 1, 6, and 7 have been amended. No new Claims have been added.

The Examiner has rejected Claims 1-4, and 6-8 under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. The Office Action also rejected Claims 1-4 under 35 U.S.C. Section 102(b) as being anticipated by Wyatt. Claims 6-8 were rejected under 35 U.S.C. Section 103 as being unpatentable over Terui et al. in view of Sakakibara.

Claims 10-19 are allowed.

#### **Claim Amendments**

Claims 1 and 6 have been amended to overcome the section 112 rejection by adding the limitation that the first catalyst component is a silver-based component selected from the group consisting of Ag (silver) metal and AgO (silver oxide), and the second catalyst component is a palladium-based component selected from the group consisting of PdO (palladium oxide) and PdO<sub>2</sub> (palladium dioxide). Support for these amendments can be found on paragraphs [0042]-[0084] of the specification as originally filed.

Because no prior art teaches this particular combination of catalytic materials for the stated purpose of removing ozone from an air stream, Claims 1 and 6, and those claims depending directly or indirectly from Claims 1 and 6, should now be allowed.

Rejection under 35 U.S.C. 112

The Examiner has rejected Claims 1-4, and 6-8 under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement, because the claims contain subject matter which was not described in the specification.

The Examiner indicated that the specification does not contain a catalytic composition consisting only of Ag or AgO and Pd, PdO, or PdO<sub>2</sub>. The Examiner pointed several times to paragraph [0068] of the specification to support this position.

To better clarify the claimed subject matter, Applicants have amended the claims by adding that the first catalyst component is a silver-based component selected from the group consisting of Ag (silver) metal and AgO (silver oxide), and the second catalyst component is a palladium-based component selected from the group consisting of PdO (palladium oxide) and PdO<sub>2</sub> (palladium dioxide).

In addition, Applicants respectfully point out to the Examiner that paragraph [0068] of the specification clearly indicates that:

"In some embodiments, catalytic composition 48 may consist essentially of silver metal and palladium oxide (PdO)."

The above statement only reflects a preferable embodiment and does not require that all embodiments of the catalyst composition consist of silver metal and palladium oxide. Other combinations between Ag (silver) metal or AgO (silver oxide) and PdO (palladium oxide), PdO<sub>2</sub> (palladium dioxide), or Pd

(palladium) metal are taught in the original specification. See, for example paragraphs [0084] ("In some embodiments, the first catalytic component of the catalytic composition may comprise at least one silver-based component, such as silver metal or silver oxide, in an amount typically in the range of from 50 to 500 g/ft<sup>3</sup> of substrate, usually from about 100 to 400 g/ft<sup>3</sup> of substrate, and often from about 250 to 350 g/ft<sup>3</sup> of substrate. The second catalytic component of the catalytic composition may comprise at least one palladium-based component, such as palladium oxide (PdO), palladium dioxide (PdO<sub>2</sub>), or palladium metal, in an amount typically in the range of from 25 to 300 g/ft<sup>3</sup> of substrate, usually from about 50 to 250 g/ft<sup>3</sup> of substrate, and often from about 100 to 200 g/ft<sup>3</sup> of substrate.") and [0096] ("The Ag metal and PdO, **or other catalytic composition**, may be disposed within the pores of the catalyst support").

The Examiner appears to construe the disclosure of the original specification narrowly, construing the terms "consisting of" and "comprising" and the recitation of a Markush group narrowly, as would be appropriate in connection with a claim. The Federal Circuit, however, has made it clear that such terms are not to be so narrowly construed in the context of a written description of a patent. *Abbott Labs. v. Andrx Pharms., Inc.*, 473 F.3d 1196 , 1210 (Fed. Cir. 2007) ("The term 'Markush group' does not have any meaning within the context of a written description of a patent. . .). Therefore, because the original specification clearly discloses the catalyst composition components of the amended claims, the amended claims meet the written description requirement.

Wyatt et al. (GB 2056424)

Wyatt et al. discloses an ozone removal system for an aircraft that may employ catalytic materials selected from "the group consisting of Pt, Ru, Rh, Pd,

Ir, Os, Fe, Co, Ni, Ag, Mn, and Sn alloys, mixtures and compounds containing one or more of these metals" (lines 31-32). Wyatt further discloses that preferred catalytic materials are "Pt, Ag and Mn" (line 51).

Compared with amended Claim 1, the Wyatt reference fails to teach a catalytic material having PdO (palladium oxide) or PdO<sub>2</sub> (palladium dioxide) as the second catalytic component. The reference teaches Pd as one of the components, but fails to teach the oxide or dioxide of this metal, as required by the amended claim.

The court in *In re Arkley*, 455 F.2d 586, 59 CCPA 804, 172 USPQ 524 (1972) held that "the reference must clearly and unequivocally disclose the claimed compound or direct those skilled in the art to the compound without **any** need for picking, choosing, and combining various disclosures not directly related to each other by the teachings of the cited reference." (emphasis in original). *Id.* 455 F.2d at 587, 59 CCPA at 807, 172 USPQ at 526. Thus, Applicants respectfully request that the anticipation rejections based on the Wyatt prior art reference be removed in light of the holding of *In re Arkley*.

Wyatt does not teach every element of Claim 1, because it does not disclose the limitations of a second catalytic component, wherein the second catalyst component is a palladium-based component selected from the group consisting of PdO (palladium oxide) and PdO<sub>2</sub> (palladium dioxide).

Claims 2-4 are novel in view of their dependency on novel Claim 1.

Applicants respectfully request that the anticipation rejection of Claims 1-4 based on Wyatt reference be removed.

Terui et al. (US 5,187,137)

Terui et al. discloses an ozone decomposing catalyst comprising a palladium oxide and Manganese oxide as essential ingredients (Column 2, lines 62-65). A titania solution is used as a binder.

Applicants reviewed the reference and note that, compared with Claim 6, the reference fails to teach a silver-based first catalyst component.

Sakakibara (JP 03-151046 A)

Sakakibara discloses a palladium and silver catalytic composition "molded on a granular article of  $\text{MnO}_2$ ."

Compared with Claim 6, the Sakakibara reference fails to teach: 1) a layer of titania disposed on the surface of the substrate and 2) the second catalyst component is a palladium-based component selected from the group consisting of PdO (palladium oxide) and PdO<sub>2</sub> (palladium dioxide).

Combining the Terui et al. reference with the Sakakibara reference

According to the Examiner, the Terui et al. reference teaches all the limitations of Claim 6, except the reference fails to teach a silver-based first catalyst component.

The Examiner cited the Sakakibara reference to teach the use of silver with palladium for decomposing ozone.

According to the Examiner it would have been obvious to one of ordinary skill in the art at the time of the invention to add the silver of Sakakibara to the palladium oxide and titania catalyst of Terui in order to harden the synergistic

effects of palladium and silver in the decomposition of ozone and the excellence in performance during the initial period as well as long term.

Applicants note that the catalyst composition according to Teriu comprises palladium oxide and Manganese oxide as essential ingredients. The catalyst composition according to Sakakibara reference comprises palladium (different from palladium oxide) and silver as essential ingredients.

In addition, Applicants note that both inventors, Teriu and Sakakibara, indicated that their own mixture has synergetic effect because of the combination of the main ingredients; thus, the combination of ingredients in each one of the references is the feature of the invention.

Applicants note that there is no technological motivation to modify Teriu by adding the silver component of Sakakibara because the modification will destroy the synergetic effect of the combination of palladium oxide and manganese oxide according to Teriu, which is the feature of the Teriu invention.

A §103 rejection based upon a modification of a reference that destroys the intent, purpose or function of the invention disclosed in the reference, is not proper and the modification cannot be properly made. In short, there would be no technological motivation for engaging in the modification or change. To the contrary, there would be a disincentive. In re Gordon 221 USPQ 1125 (Fed. Cir 1984).

Furthermore, Applicants note that the Teriu reference uses PdO and the Sakakibara reference uses Pd. In the unpredictable chemical art, many factors must be taken into consideration. One of ordinary skill in the art would not have been able to predict the synergetic effect of combining PdO and Ag by looking

at the combination of Pd and Ag, because each chemical compound has its own characteristics and the PdO and Pd will react differently with Ag.

The mere fact that it is possible for two isolated disclosures to be combined does not render the result of that combination obvious, absent a logical reason of record, which justifies the combination.

Claims 7-8 are novel in view of their dependency on novel Claim 6.

Applicants respectfully request that the obviousness rejection of Claims 6-8 based on the combination of Teriu and Sakakibra references be removed.

#### **CONCLUSION**

Reconsideration and withdrawal of the Office Action with respect to Claims 1-4 and 6-8 is requested. Applicants submit that Claims 1-4 and 6-8 are now in condition for allowance, or alternatively, in better condition for appeal.

In the event the examiner wishes to discuss any aspect of this response, please contact the attorney at the telephone number identified below.

☒ The Commissioner is hereby authorized to charge payment of the following fees with this communication or credit any overpayment to Deposit Account No. 50-0851:

☒ Any filing fees under 37 CFR 1.16 for the presentation of extra claims.

Respectfully submitted,

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